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(54) LAMINATE-FACED TIMBER-FRAMED STRUCTURES

(71) We, W. MARSDEN & CO. LIMITED, a British Company, of Leeds Road, Kingston-upon-Hull, E. Yorkshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to timber framed structures for the use as flush doors or as panels for use in furniture making and to the manufacture of such structures.

It is well known to make timber-framed panels by constructing a quadrilateral (usually rectangular) timber frame, which gives strength to the structure, and fixing on each side of the frame a veneered board. The board may be made of hardboard, particle board (e.g. chipboard) or plywood (multiple plies of wood laid in alternating directions of grain and adhered together); each board is finished with a layer of veneer, i.e. a layer applied for decoration, to afford a pleasing surface finish, such as of wood, synthetic plastics material or a treated paper. Such a panel can be hollow, or the spaces between the frame and boards may be filled with a sound-insulating heat-insulating or fire-resisting material, and it can be fitted with a catch and handles for use as a flush door or can be used as a panel in constructing furniture such as writing desks.

However, difficulty has hitherto been experienced in finishing the edges of such panels. With a door, the two vertical edges are visible when the door is opened, and it is desirable that they be attractive in appearance. One or more edge is also usually visible when such panel is used in a piece of furniture. Hitherto, these visible edges have been treated in one of the following ways, which will be described with reference to the accompanying drawing, in which each of the figures is a perspective view of a corner of a timber-framed structure:

Fig. 1 shows a known type of structure without any edge finish;

Figs. 2 and 3 show further known types

wherein at least one edge is finished respectively with a piece of veneer or a timber strip, and

Fig. 4 shows a structure having skins constructed of laminates according to the invention.

In each of these figures the following references are used in common: A pair of laminates 2 which serve as skins for the structure are each composed of a sheet 4 of board (e.g. hardboard, particle board or plywood, of thickness usually 3.0 mm) to which is adhered a sheet 6 of a veneer (e.g. of wood, plastics material or paper, of thickness usually about 0.5 mm or less); the face of the one veneer which is visible is marked 8. A timber frame is composed of four members, of which the abutting ends of two members 10 and 11 are shown in the figures; when the structure is used as a door the frame is about 30 mm thick (measured between the laminates; the end face of the member 10 is visible, exposing cross-grain of the wood and is designated 12. The long face of this member (which forms the edge of the structure when it is used as a door) shows long-grain, if it is visible, as shown at 14 in Figs. 1 and 4. Frame members are shown extending beyond the laminate in Figs. 3 and 4, to better show their size.

In Fig. 1 the side face 14 of the frame is visible and also the adjacent edges 16 of the laminate (which is here drawn as comprising plywood). This has the following disadvantages. The texture and colour of the edges of the laminate are not likely to match that of the face 14 of the frame. It should be possible to readily remove, by planing or sanding, a thin layer of the edge of the structure, to permit its adjustment to the correct size for fitting into a door frame or into a designated place in a piece of furniture, but if the board 4 is of particle board or hardboard it is not easy to leave a smooth finish at the edge after such adjustment, and if the board is of plywood some of the layers of the plywood will become torn during such operation and in any

event the appearance of the end grain layers of the plywood will be unsightly.

In Fig. 2, the exposed faces 14 and 16 at the edge of the structure have been covered with a strip 18 of veneer, selected to match the veneers 6, 8. However, since the veneer is so thin it is not possible for any material to be removed from the edge of the structure for the aforesaid purpose.

In Fig. 3, the exposed faces have been covered with a strip 20 of timber (commonly known as a lip). This timber can be worked permit some adjustment of the size of the structure, to an extent dependent on the thickness of the lip, but this construction still has disadvantages: It may be difficult to match the appearance and texture of the lip 20 to that of the faces 8 of the veneers, and in any event the joint 21 between the lip 20 and face 8 will to some extent be visible and will spoil the appearance of the face of the door, since it is difficult to make the lip and face precisely level especially if the veneer is not of timber and cannot be surface worked without damage; and this discontinuity may be accentuated by differential shrinkage or swelling of the lip under differing humidity conditions.

It is therefore a purpose of this invention to provide a new way of constructing timber-framed structures of the aforesaid type in a manner which overcomes these disadvantages. We have found that this can be achieved in the construction of an edge of the laminate used as the skins by replacing the edge of the board by solid timber.

According to the present invention, a timber-framed structure suitable for use as a flush door or as a panel for furniture making, which comprises (a) a quadrilateral timber frame and fixed to at least one face of said frame, (b) a laminate which comprises (i) a board made of hardboard, particle board or plywood having adhered along at least one edge thereof (ii) a fillet of timber of the same thickness as the board, the long grain of the fillet being arranged to run with the edge of the laminate, and (iii) a sheet of a veneer adhered to one face of the board and fillet, the exposed edge of the fillet being level with the edge of the veneer, the edge of the laminate (b) being level with the edge of the frame (a) at least where a fillet is present.

By a "fillet of timber" we mean a long strip of solid timber, rectangular in cross-section, of the same thickness as the board.

Preferably a fillet is present along two opposite and parallel edges of the board.

It is advantageous, for obtaining the best appearance of the edge of the structure as well as of its face, if the veneer is of timber and the fillet is selected so as to have the same visible appearance (colour and texture) as the veneer; any timbers ordinarily used as veneers can thus be used for

the fillet. The exposed timber of the frame may then also have an appearance which matches that of the fillet and the veneer. However, the veneer may also be of paper or of plastics material, which then may be stained or printed so as to imitate the colour of the timber fillet and frame as far as is possible.

A portion of a preferred structure according to the present invention is shown in Fig. 4 of the drawing, wherein reference numerals 2 to 14 have the meanings mentioned above. The timber fillets are designated 22, and part of the upper veneer 6 is broken to better show one fillet.

The width w of the fillet 22 must be such that the junction of the fillet and the board 4 is well within the frame member 10, so that the board 4 is itself fixed to and supported upon the frame; on the other hand the width w must be great enough to permit removal of material from the face 14 of the frame member to a desired extent e.g. up to 2 centimetres, without exposing the board 4.

The structure of the invention can be manufactured commercially as follows, for the usual embodiment where fillets are present in two parallel edges.

Two fillets 22 are placed one at each opposite edge of a rectangular board 4; the assembly is fed into a machine which applies glue to the edges of the fillets and holds them pressed to the edges of the board whilst the glue is cured, e.g. by heating by radio-frequency radiation. Glue is then spread on the board and fillets and a sheet of veneer is placed thereon and caused to adhere by cold or hot pressing in conventional manner. Laminates can also be made with fillets in one, three or four edges.

A timber frame is constructed in conventional manner, e.g. by stapling or morticing the members together, and a pair of the aforesaid laminates are selected of the same size as the frame; adhesive is applied where needed to the inner faces of the laminates, i.e. at least at the periphery of each board, and the frame is sandwiched between the laminates so that it is covered thereby with the veneers outermost and the edges of the laminates level with the edges of the frame; the skins are then adhered to the frame.

The timber-framed structures of the invention have the advantage that they do not expose any board or end-grain timber on their filleted edges, they present one or more finished edges without any timber lip or edge veneer, without any junction lines on their main faces, and can be edge-finished as required or the edges rounded or arched, whilst maintaining a good appearance of the edge. These structures are useful in making doors and as panels in furniture.

WHAT WE CLAIM IS:—

1. A timber-framed structure suitable for

use as a flush door or as a panel for furniture making, which comprises (a) a quadrilateral timber frame and fixed to at least one face of said frame, (b) a laminate which comprises (i) a board made of hardboard, particle board or plywood having adhered along at least one edge thereof (ii) a fillet of timber of the same thickness as the board, the long grain of the fillet being arranged to run with the edge of the laminate, and (iii) a sheet of a veneer adhered to one face of the board and fillet, the exposed edge of the fillet being level with the edge of the veneer, the edge of the laminate (b) being level with the edge of the frame (a) at least where a fillet is present.

2. A structure as claimed in Claim 1, in which the frame is covered on both sides with the laminate and all the edges of the laminate are level with the edges of the frame.

3. A structure as claimed in Claim 1 or 2, in which a timber fillet is present along two opposite and parallel edges of the sheet of board.

4. A structure as claimed in Claim 1, 2 or 3, in which the veneer is made of timber and the timber of the veneer and of the fillet are of the same visible appearance.

5. A structure as claimed in Claim 4, in which the exposed timber of the frame has a visible appearance which is the same as that of the fillet and the timber veneer.

6. A structure as claimed in Claim 1, 2 or 3, in which the veneer is made of paper or a plastics material.

7. A method of making a structure as claimed in any preceding claim, which comprises taking two of said laminates, applying adhesive to at least the periphery of the board which forms the inside face of each laminate, sandwiching a timber frame between the laminates and causing the laminates to adhere to the frame.

8. A timber-framed structure when made by a method as claimed in Claim 7.

9. A timber-framed structure, constructed substantially as hereinbefore described with reference to Figure 4 of the accompanying drawing.

10. A door or piece of furniture which incorporates a timber-framed structure as claimed in any of Claims 1 to 6 or 8 to 9.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of
the Original on a reduced scale

